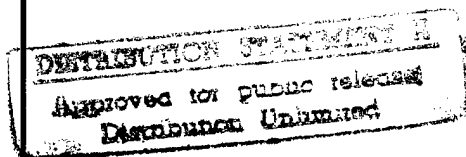


U.S. DOCTRINE FOR COMMAND AND CONTROL OF OPERATIONAL FIRES

A Monograph
By
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Field Artillery



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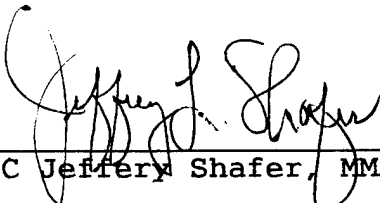
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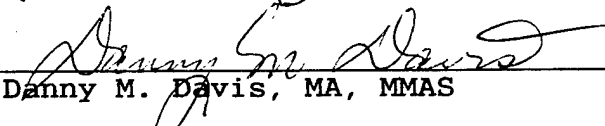
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ABSTRACT

U.S. DOCTRINE FOR COMMAND AND CONTROL OF OPERATIONAL FIRES
by MAJ Leonard G. Tokar, Jr., USA. 49 pages.

This monograph examines doctrine for joint operations to determine if it helps speed planning and coordination for the employment of operational fires. The Joint Force Commander is experiencing the problem of centrally controlling operational fires with the difficulties posed by force projection and the overlapping deep battle capabilities of the service components.

This paper first defines the concept of operational fires and makes several assumptions as to why the current doctrinal considerations may need to be updated. It then provides historical examples of the employment of operational firepower in the Normandy campaign in 1944 and in the Persian Gulf War in 1991.

Finally, this monograph focuses on the preceding issues to argue that joint doctrine needs a standardized organization at the Joint Force Commander's level to meet the requirements of planning and coordinating the use of operational firepower. The recommendation is the formation of a Joint Operational Fires Cell at the theater level to provide the centralized joint staff agency as a standard staff section.

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I. Introduction

"The art of war is simple enough. Find out where your enemy is. Get at him as soon as you can. Strike him as hard as you can, and keep moving on."

Ulysses S. Grant from the Dictionary of Military and Naval Quotations

Although operational art is simplistic in theory, the true nature of its complexity is revealed in a detailed study of how to plan where to strike the enemy and how to synchronize the blows. The U.S. military is experiencing this problem today due to the difficulties posed by force projection and the technological explosion.

When designing an operation, commanders attempt to attack enemy forces throughout the depth of their formations. Operational fires are the Joint Force Commander's (JFC) means to achieve a decisive impact in a campaign or theater-level operation as an element of the application of force. All components of the U.S. military are capable of contributing to the operational firepower available to the JFC.

Doctrine for joint operations is not clear on the planning responsibilities for operational fires. All service components can contribute to the operational firepower with the technological enhancement of conventional weapons and intelligence gathering sensors. JFC's can plan and execute operational fires with decisive results; the shortcoming is that the procedures are not uniform across

the spectrum of the components, nor standardized in doctrine.

For operational fires to be effective, a harmony must exist between the components. Since all components can contribute to the campaign, commanders desire unity of effort to focus on the centers of gravity while avoiding duplication and waste. Operational fires result from the coordinated efforts of several players. These players are linked together in a series of combat activities that require precise prediction of enemy activities, synchronization with the close battle and supporting operating systems, and detailed coordination between components. Given the dynamic complexity of conducting operational fires, this paper will explore joint doctrine to determine if it helps speed planning and coordination for the employment of operational fires.

The allied breakout from the Normandy beach-head in 1944 is an example of employing operational firepower against a specific operational objective to facilitate future close-battle operations. A somewhat complicated joint operation, it illustrates the level of detail required for joint missions and the importance of centralized control and communications with the operational players.

Operation DESERT STORM is a modern example that highlights the application of air-land battle doctrine combined with 21st Century technological innovations upon conducting operational fires. All services contributed to

the operational effort and stressed the current command and control structure of the air component commander being responsible for operational fires.

Emerging joint doctrine proposes dividing the theater among the components to assign and standardize responsibility for specific geographic areas. While there is a need to improve current doctrine for assigning responsibility, there are still problems with this proposal. This method may enhance component operations within the assigned area, however, it may not always promote ease of coordination among services. Additionally, by segmenting the battlefield, potential gaps could develop along the seams creating the opportunity for potential enemy exploitation.

This paper will focus on the preceding issues to argue that joint doctrine should standardize an organization at the JFC level to plan and coordinate operational fires. The emerging doctrine recognizes the need for centralized coordination, but, gives latitude to the commander in determining how to organize the staff. This paper will discuss the need for a standardized joint operational fires cell at a theater level.

II. Doctrine and Definitions

"Joint force commanders choose the capabilities they need from the air, land, sea, space, and special operations forces at their disposal. The resulting team provides joint force commanders the ability to apply overwhelming force from different dimensions and directions to shock, disrupt, and defeat opponents." - Joint Warfare of the U.S. Armed Forces.¹

An assumption, as inferred by Joint Publication 1, is that future military operations will be a joint effort.² This assumption is based upon an analysis of the environment. The U.S. Armed Forces must be prepared to defend national interests world-wide by projecting and sustaining the entire range of military power over vast distances. Given the differences in roles and missions of the services, power projection across the spectrum of military capability requires joint force application. Power projection, therefore, inherently becomes a joint undertaking because of the inter-Service linkages of modern command, control and communications and the multi-service structure of the defense transportation system.³

In addition to the joint power projection requirements outlined by Joint Publication 1, the multi-service weapon and intelligence collection improvements enhance the joint force capabilities. Forces on land, sea and air can reinforce and complement each other at a continuously increasing rate. The enemy is subject to acquisition, tracking, engagement and battle damage assessment from a variety of systems that belong to the different services.

The leverage of technology enhances the linkages between services for coordination of these joint assets through improved communications and shared situational awareness.

New capabilities enable the services to complement each other in the supporting functions such as intelligence collection, fire support, logistics, air defense and aviation. The Air Force can provide moving target indicators and airborne threat intelligence. The Navy can provide interdiction from surface-to-surface cruise missiles and mobility from fast sea-lift ships. The army can contribute missile fire to destroy enemy air defense. These several examples help illustrate the broad scope of knowledge required to coordinate these capabilities into a operational fires. Expertise that is unique to the individual service component is critical in providing mutual understanding of the capabilities and limitations of assets supporting joint operations.

A second assumption is that the services must have joint skills, or a familiarity with procedures in different services, in addition to traditional service competence. Members, especially forming a Joint Task Force (JTF) staff, must have detailed knowledge of the capabilities of the sister services and the assets that they employ. Members of a JTF staff must understand the linkages, limitations or constraints associated with the employment of the assets. One such consideration could be communication assets employed to command, control and coordinate the joint

assets. The communication requirement could range from a simple radio frequency and code to a more complicated liaison team. Potentially, it could involve subordinate units collocating operations centers. A JTF staff should be able to rapidly determine the requirements for a multi-service operation and streamline the coordination.

A third assumption is that doctrine for joint operations should offer a common perspective from which to plan and operate. Joint Publication 1 states that crises may unfold rapidly and critical engagements may occur with little time to prepare.⁴ Because commanders and staffs could be rapidly assembled for combat, JTF staffs must be trained and ready before the conflict. To prepare staff members for short-notice operations, joint doctrine should describe, in sufficient detail, the composition and duties of a joint force. A detailed doctrine for planning joint operations should help provide a common base of knowledge for a more rapid activation of a joint force. As a minimum, this doctrine should reduce some of the questions and experimentation that occurs at the beginning of a joint operation. A detailed doctrine could help standing joint organizations prepare for future operations through planning drills and rehearsals. The value of a doctrine is that it would establish uniformity among the services, save time, improve understanding, and result in increased efficiency.

The fourth and final assumption focuses on the employment of operational fires and how they affect future

operations. The assumption is that during conflict, commanders must plan deep operations that will shape the close battle at a later time. At the JFC level, operational fires are a method of attacking the enemy simultaneously, throughout the depth of the theater, shaping the area of operations for future battles.

Given the extended capabilities to acquire and engage the enemy, the joint force can execute close, deep and rear operations simultaneously. This concept of simultaneous engagement implies attacking committed and uncommitted enemy forces, command and control, lines of communications and logistics.⁵ Joint operations tend to be non-linear, with the effects of air, sea, space and special operations being felt more or less independently of the front line of the ground operations.⁶ These non-linear campaigns should occur simultaneously to maximize the effect of moral disintegration and to desynchronize the enemy and destroy equipment.

Joint force commanders should recognize that operational fires, while not supporting ground maneuver, are linked to the close battle for hand-over responsibilities. Fires may set the conditions for subsequent ground or sea operations, but, the ground maneuver units must be synchronized into the campaign to exploit at the proper location and in the correct sequence. The use of operational fires gives the joint force commander the ability to influence future operations by engaging enemy

deep and limiting his ability to fight effectively in subsequent operations.

The joint force commander can employ a variety of types of operational fires to degrade and shape the enemy's capabilities and activities. The next section will discuss the definition and the purpose of operational firepower.

Joint firepower consists of a variety of firepower means the JFC can use to divert, disrupt, delay, damage or destroy the enemy's air, surface, and subsurface military potential. It can be classified as tactical, operational, or strategic, based upon its intended effect.⁷ Tactical firepower primarily supports the joint force tactical fight. Ground maneuver commanders exercise the control over tactical firepower that supports the close fight. Tactical firepower includes the use of target acquisition assets, indirect fire assets, fixed and rotary-winged aircraft, and electronic attack assets.⁸

Tactical fires support maneuver forces in direct contact with the enemy by suppressing or destroying direct and indirect fire systems and air defense systems. They screen maneuver by obscuring enemy observation of the battlefield with smoke. They provide countermobility by delivering scatterable mines and by covering obstacles. These fires also include the non-lethal effects of electronic warfare. Tactical fires are fire support.

Strategic firepower is intended to achieve a major impact at the strategic level and thus an impact on the

course of the theater campaign or war as a whole. The intended outcome or effect qualifies the weapon as strategic or operational. An example of strategic fires is a bombing campaign aimed at limiting an enemy's industrial capability. Nuclear weapons are usually categorized as strategic firepower.⁹

Operational fires achieve a decisive impact on a subordinate campaign or major operation.¹⁰ Operational fires are not fire support. They are provided by assets that are not dedicated to supporting ground maneuver in contact. Operational fires may be conducted by air, missile and Special Operations Forces. The target and its decisiveness to the campaign, however, determine if it is operational, not the means of delivery.¹¹

A key aspect in using operational firepower is integrating it with the land maneuver. FM 100-7 states:

"[Operational firepower] must be closely integrated and synchronized with [the JFC's] concept for maneuver. In that regard, operational firepower is integrated normally with operational land maneuver for synergistic effect, staying power, and more rapid achievement of strategic aims. Operational firepower is not fire support, and operational maneuver is not necessarily dependent upon operational firepower. Still, operational maneuver can be affected by such fires and can exploit opportunities created by such fires and can exploit opportunities created or developed by the JFC's operational firepower."¹²

This is the nature of operational art. Operational art sets the stage for future battles. Because operational firepower can create the conditions for future maneuver and

exploitation, the operational fires and maneuver should be synchronized.

Traditionally, operational firepower has been the responsibility of the air component, subject to the desires of the JFC. With the introduction of longer-ranged and precision munitions across all of the services, operational firepower is becoming joint and multinational in nature.¹³ Operational firepower can now include cruise missiles, attack helicopters, rocket and missile artillery and Special Operations Forces direct action missions.

Since operational firepower has such a close link with future operations in a campaign, operational firepower is planned top-down. The operational commander establishes the objectives, identifies targets, and then passes them to subordinate units for execution.¹⁴

Subordinate commanders contribute to the operational targeting effort by nominating targets that could enhance their operations. In this way, the operational fire plan is considered to be top-down planned and bottom-up refined.

The purpose of operational firepower is to engage the enemy across the depth of the operational area. Joint Publication 3.0 states:

"The evolution of warfare and advances in technology have continuously expanded the depth of operations. Airpower can be projected at greater distances while surface forces are able to maneuver more rapidly and project their influence at increasing depths."¹⁵

Engaging the enemy across the depth of the theater simultaneously could lead to his exhaustion and collapse from within. Without this, an alternative could be a battle of attrition with limited depth which could allow the enemy to resupply and fight longer.

The simultaneous action offered by operational fires and maneuver reflect Jomini's advocating for combinations of blows upon the enemy.¹⁶ A campaign is not unlike a boxing match where a fighter delivers blows in series to various areas of the opponent's body. Simultaneous engagements deny the enemy an opportunity to recover and limit his ability to anticipate the next engagements because of their relentlessness.

FM 100-7 lists examples of enemy capabilities that operational firepower could engage:

- Destruction of critical functions, facilities and forces having operational significance.
- Isolation of a specific battle within the battle space.
- Facilitation of maneuver to operational depths.¹⁷

Operational firepower could strike at decisive points that lead to the operational centers of gravity.

Operational plans during the Persian Gulf War serve as an example. The operational planners focused on three centers of gravity. These were the Iraqi leadership, petroleum and electricity targets, and the Iraqi infrastructure. Planners believed that destroying these centers of gravity would devastate the enemy.¹⁸

By using operational firepower to isolate a specific battle, or divert or reduce enemy capabilities prior to a battle, operational firepower creates freedom of action for the ground maneuver commanders. The enemy is then subject to the ground maneuver commander's choice of the time and location for the battle.¹⁹

Operational fires can be used to interdict enemy military formations and equipment. Interdiction can have both operational and tactical effects by reducing or diverting enemy formations. Interdiction requires synchronization in time, space, and purpose with the supporting and supported operations in the joint force.²⁰ Synchronized maneuver and interdiction efforts resemble the combination of blows described by Jomini. The enemy is faced with the dilemma of responding to the interdiction while being engaged by the maneuver. In this combination, maneuver and interdiction achieve a greater leverage of combat power against enemy forces.

With the improved capabilities to weapons systems, all services now contribute to the operational firepower campaign with weapons and collection platforms. The U.S. Army was a relatively new operational firepower provider with the addition of enhance aviation and artillery weapons.

During the late 1980's, corps and division commanders were presented with two technological innovations that would further expand their combat reach and change the nature of the battlefield.

The first innovation is the AH-64 Apache attack helicopter. The AH-64 adds the capability to conduct corps and divisional deep maneuver without the extensive logistical requirements, extended time, or inherent risk of a deep ground maneuver. The AH-64 attacks enemy forces under conditions of limited visibility and from a stand-off range of eight kilometers. Equipped with a laser, the helicopter can illuminate targets for employment of precision-guided munitions, including Copperhead artillery projectiles and its own Hellfire missiles. The Hellfire missile has a probability of kill of greater than 90%. Each AH-64 could carry sixteen missiles. A corps or division can launch eighteen Apaches, employing two hundred eighty-eight Hellfire missiles, to intercept and destroy a lucrative target.

The second innovation is the Multiple Launch Rocket System (MLRS). In the division, the MLRS replaced the aging M110A2 howitzer battalion with nine rocket launchers. This responsive system provides battalion-equivalent massed-fires in excess of thirty kilometers.

Although the launchers are able to emplace and fire within three minutes, bypassing the traditional manual fire control requirements, the most significant improvement is the means of achieving a battalion mass-effect from a single launcher. In terms of delivery, commanders can use a single MLRS platoon to fire target groups without sacrificing mass

effects as happened with a cannon battalion engaging target groups.

The Army Tactical Missile System (ATACMS) replaced the Lance missile as the corps deep fire weapon. The ATACMS gives the corps commander the capability of precision interdiction beyond one hundred-fifty kilometers. Since the ATACMS is fired from the M270 MLRS launcher, commanders do not have to coordinate for an additional artillery battery in the zone, as had been the case with the Lance units.

With the improvement of Army attack helicopters and missile systems, the corps aviation and artillery brigades have become the theater and corps deep attack assets. Army attack helicopters, supported by suppression of enemy air defenses (SEAD) from MLRS and ATACMS, can range beyond the forward line of troops and engage targets, directly or indirectly (with remote laser-designation).

Corps aviation and artillery brigades can now provide the ground maneuver commander an asset that can provide operational fires. The upgraded Army weapons systems have the range and produce effects that can be synchronized with Marine, naval and Air Force missile and air power for decisive results.

III. Historical Perspectives

This chapter will provide a historical review of operational firepower to illustrate the complexity and detailed coordination required for employment. The Normandy Breakout in 1944 and the Persian Gulf War in 1991 provide examples of how operational firepower provided interdiction and attacks on the operational centers of gravity.

In July 1944, the Allied ground attack was stalled in the bocage of Normandy, France. Lieutenant General Omar N. Bradley was determined to break the stalemate that was developing. Bradley's immediate objective was the capture of the Breton ports to increase the flow of service support into the theater. The growing cost of battle in the bocage was beginning to overwhelm the throughput of the captured ports.²¹

In order to break this stalemate, Bradley's staff developed a plan they called OPERATION COBRA. The plan called for Major General J. Lawton Collins' VII (U.S.) Corps to concentrate power on a narrow front and penetrate the German defenses west of St. Lô. While Collins was attacking toward the Brittany peninsula, Major General Troy H. Middleton's VIII (U.S.) Corps would attack to seize the approaches into Brittany and trap the German LXXXIV Corps between it and Collins' VII Corps. This plan was unusual for the American army in its emphasis on concentrated power on a narrow front and in its indirect approach and potential

envelopment of an enemy force.²² The center of gravity for the U.S. operation was the use of air power.

Bradley realized that to break the stalemate that was reminiscent of the First World War, he had to leverage the combat power of the airplane, a system that was not fully understood in that war. Recalling the massive air bombardment preceding the entry into Cherbourg, Bradley and Collins determined that carpet bombing the German defenses at the point of penetration would provide the firepower to open the breach.

Bradley's plan called for a massive aerial campaign that would carpet bomb an area south of the St. Lô-Périers road using both fighter-bombers and medium bombers from the Ninth Air Force and heavy bombers from the Eighth Air Force. Bradley selected the St. Lô-Périers road as a boundary for the bombardment because he believed that it was easily recognizable from the air. Bradley expressed his intentions:

"I've been wanting to do this now since we landed. When we pull it, I want it to be the biggest thing in the world. We want to smash right through."²³

At the conclusion of the aerial bombardment, VII Corps armored units would attack south, through a three-mile-wide gap toward the Cotentin coast in an attempt to envelop the German LXXXIV Corps with VIII Corps. Because armored forces were to spearhead the assault, Bradley was concerned that

heavy cratering from the bombardment would restrict armored maneuverability.

To separate the attacking aircraft and limit the cratering of the battlefield to be immediately occupied by the ground troops, a three belt aerial engagement area was designed. Fighter-bombers exclusively would engage targets in an area 250 yards deep and 7000 yards long just beyond the St. Lô-Périers Road. Their method of attack was to be a combination of strafing and bombing with light fragmentation bombs to ensure against deep cratering. Heavy bombers would engage an area one mile deep beyond the fighter-bomber zone. Medium bombers would follow the heavies and concentrate on the enemy strongpoints that were out of range of field artillery. By partitioning the engagement area, Bradley's plan was to limit the deep cratering on the immediate ground maneuver objective, unlike Montgomery's 1 Corps attack at Caen.²⁴

A major problem in developing the operational fire plan for OPERATION COBRA was determining the minimum safe distance for allied troops from the effects of the bombing. Bradley realized that if the separation between troops and bombs was too great, the bombing would be ineffective in opening the breach in the German defenses. Too narrow a separation would increase the risks to friendly troops.

Bradley needed VII Corps attacking the breach virtually as soon as the bombardment ended. He proposed withdrawing

VII Corps 800 yards behind the target area on the south side of the St. Lô-Périers Road. To guard against bombs hitting friendly troops, he recommended that the bombers fly their bomb runs parallel to the friendly line of troops, rather than perpendicular to the front with the approach over the heads of friendly troops.²⁵

The airmen countered that they could not assure the safety of the friendly troops without a minimum separation of 3000 yards. The airmen further pointed out that a bombing approach parallel to the front, on its narrow rather than wide side, would cause excessive congestion on the approach. They further argued that a perpendicular approach would limit the amount of enemy interference with the aircraft.

Bradley was not inclined to surrender almost two miles of territory that had been fought for yard by yard. In analyzing the risk to his front-line troops from stray bombs, he agreed, however, to withdrawing his forces 1200 yards from the target area to create a safety margin. The airmen agreed to strike no closer than 1450 yards with the heavy bombers. Bradley did not confirm that the aircraft would approach parallel to the front because he believed that the coordination was already complete.²⁶ The approach issue, however, was not resolved.

Eighty minutes prior to H-Hour, the bombardment was to begin with fighter-bombers attacking the 250 yard strip

south of the St. Lô-Périers Road. Twenty minutes later, the heavy bombers would carpet bomb south of the 250 yard strip for one hour. Immediately following the heavy bombers, the fighter-bombers would attack their initial engagement area for an additional twenty minutes while the ground troops moved to their line of departure. Ten minutes later, the medium bombers would attack the southern belt of the engagement area for forty-five minutes.

Collins had over one thousand artillery pieces from VII Corps artillery and First Army reinforcing units to supplement the aerial bombardment. Bradley's expectation was that the artillery preparation would suppress the enemy anti-aircraft guns and mass fires on areas where VII Corps units would conduct penetration of the enemy lines. However, in actual execution, the absence of a centralized fire plan, combined with a shortage of artillery ammunition, limited this expectation. Division artillery commanders planned their own fires within their zones of operation. The shortcoming of their fire-plans was that no single agency had responsibility to ensure that they adequately targeted anti-aircraft guns and provided a sufficient volume of fire on targets. Had VII Corps planned a centralized scheme of fires, they could have prioritized targets and massed their limited ammunition against the targets critical to supporting the air attack and the penetration.

Since OPERATION COBRA was dependent upon air support, Air Chief Marshal Leigh-Mallory received the authority to set the date and the time for H-Hour. Anticipating a break in the poor weather, Leigh-Mallory set the date as 24 July and the time as 1:00 PM by which the overcast skies would clear. After traveling to France on the morning of the 24th and finding the weather conditions below minimum standards, Leigh-Mallory postponed the operation.²⁷

By the time the postponement occurred, six fighter-bomber groups and three heavy bomber divisions of the Ninth and Eighth Air Forces had already taken off from their bases in England. Three of the six fighter-bomber groups were recalled, but, the rest of the aerial strike package proceeded to the target area.²⁸

The fighter-bombers attacked the strongpoints in the narrow strip south of the road and a few selected targets north of the road. No radio frequencies had been established for emergency communications with the heavy bombers, so, attempts to recall them made on frequencies they might be listening to were ineffective. The first formation of five hundred heavy bombers found the visibility so poor over the target area that they did not bomb. The second formation encountered the same conditions, however, thirty-five planes dropped their bombs. Three hundred bombers from the third formation bombed the target area prior to being notified of the postponement.²⁹

One bombardier mistakenly released his bombs early as did those bombers following him. The bombs fell 2000 yards north of the road killing 25 soldiers and wounding 131 of the 30th Division. Furthermore, to Bradley's dismay, the bombers approached the target area perpendicular to the front causing the friendly troops to become accidental targets.³⁰

While Bradley had given the Germans an obvious warning of an impending operation, he had no choice but to attempt COBRA again on 25 July. He realized that the bombers would again approach over the heads of friendly troops because the airmen could not develop a new plan before the 25th. To limit friendly casualties, VII Corps would mark their forward lines with high-visibility signaling panels.

The next day, the fighter-bombers precisely engaged the targets in the 250 yard narrow strip. The smoke and dust from the artillery preparation and the bombs began to drift over the friendly troops obscuring their marking panels. The heavy bombers flew at a lower altitude than normal, requiring a recomputation of bombardiers' calculations. At the lower altitude the bombers met increased enemy flak and had to loosen the formations. As a result of the conditions, a considerable amount of the heavy bombers munitions fell outside the target area. The result was 111 friendly soldiers killed and 490 wounded.³¹

As a result of the bombing of the friendly troops, the momentum of the VII Corps attack was hindered. The ground

commanders' expected that the battlefield would be shaped for the close battle. What Allied troops encountered was effective resistance from dug-in German tanks and infantry. The Germans had even infiltrated into the safety zone created for the carpet bombing. Ground gains on 25 July were disappointing to Bradley, as his force only progressed two thousand yards at best. To the maneuver units of VII Corps, the outcome of the bombing had cost them friendly troops lives and the loss by withdrawal of one mile of ground. The carpet bombing did not produce the tremendously devastating results that Bradley had hoped for.

In analyzing the shortcoming of the design of OPERATION COBRA, the major faults were in the task and purpose of the operational fires and the lack of unity of command in a joint operation. Regarding the purpose of the carpet bombing, Bradley did not articulate the effects he wanted from the fires in specific detail. His vision was that the combination of air and artillery fires would destroy enemy troop concentrations at the points of penetration and delay enemy reserves from reinforcing forward units. By employing aircraft he added an implied task of providing security for their approach by suppressing anti-aircraft guns. Had he articulated these desired effects to the Air Force, the airmen may have advised that carpet bombing was not suitable. A more effective solution may have been to engage forward enemy units with fighter-bombers and artillery,

while attacking enemy reserve units with more precise aerial attacks from medium bombers.

The second major shortcoming in planning the fires for OPERATION COBRA was the lack of unity of command. The most glaring example was that of Leigh-Mallory, the supporting commander, determining the commencement of the attack. Had a joint force planned the operational for OPERATION COBRA, they could have recognized and planned to satisfy the Army and Air Force unique requirements. A joint force could have addressed the details such as enemy dispositions and their effect on the air corridor, minimum safe distance from target area, and most importantly, centralized communications. A single commander could have mandated joint activities, including a rehearsal prior to the execution of OPERATION COBRA.

The study of OPERATION COBRA is valuable, not only from the aspect of centralized command and control, but from that of using fires against operational centers of gravity to shape the battlefield for future close battle. Forty-five years later, a JFC would plan a campaign that would use operational fires to disrupt enemy operations through the application of joint firepower as an independent effort. The designers of OPERATION DESERT STORM incorporated the operational fires concepts pioneered during the Second World War.

The 1991 Persian Gulf War is a contemporary example of operational firepower used independently to attack the

centers of gravity as well as for interdiction of enemy forces to support ground maneuver. General H. Norman Schwarzkopf, Commander, U.S. Central Command (CENTCOM) stated his intentions on the four-phased plan to eject the Iraqis from Kuwait:

"We will initially attack into the Iraqi homeland using air power to decapitate his leadership, command and control, and eliminate his ability to reinforce Iraqi ground forces in Kuwait and Southern Iraq. We will then gain undisputed air superiority over Kuwait so that we can subsequently and selectively attack Iraqi ground forces with air power in order to reduce his combat power and destroy reinforcing units."³²

The planning for the use of operational fires focused on attempting to isolate Saddam Hussein from the deployed field army and to attack and eject the Iraqi army from Kuwait. In determining the centers of gravity for the operation, a staff led by Lieutenant General Charles A. Horner, the CENTAF commander, developed the targeting priorities for defensive action. The initial priorities, as briefed by Horner, were to gain air superiority and interdict the Iraqi forces while protecting ports and rear areas.

In Washington, D.C., the Air Staff formed a planning staff called Checkmate that was supervised by Colonel John A. Warden, III. Checkmate members developed an aerial operation to eject the Iraqi forces from Kuwait. Warden analyzed the theater and divided the key enemy capabilities into five concentric rings. The innermost ring was the

Iraqi leadership including Saddam Hussein. The second critical ring was the petroleum and electricity targets. Without the support of petroleum and electricity, a modern military machine would be hindered. The third ring was the Iraqi infrastructure, mostly the transportation network. The fourth ring was the Iraqi population and the fifth was the fielded military force.³³ The weakness in the plan was that it did not have a provision to attack the fifth ring, the fielded forces.

The plan was modified and expanded prior to execution to include the Iraqi forces, however, Warden's principles remained consistent. The key to defeating the Iraqi fielded forces was to attack the core leadership and sustainment capabilities. By silencing the leadership and crippling the logistics infrastructure, Saddam would not be able to generate or apply his combat power.

Unlike Bradley's OPERATION COBRA, all services possessed advanced weapon systems with extended range and effective munitions that contributed to operational firepower. In addition to the fixed-wing aircraft of the Navy, Air Force, Marine Corps and coalition forces, the Navy also had Tomahawk land attack missiles (TLAM) for precision strikes at operational targets. The Army had recently fielded AH-64 Apache helicopters and the MLRS with the ATACMS munitions. SOF forces were deployed for special reconnaissance and direct action missions. The operational fires would be a multi-service effort.

The planning effort was dominated by Air Force officers. Schwarzkopf had given Horner latitude in planning the air offensive operations.³⁴ The Master Attack Plan and the Air Tasking Order (ATO) were developed by Horner's target planning cell, known as the Black Hole.³⁵

Horner did not have a joint staff. His staff was composed of the officers that served with him as commander of the Ninth Air Force. His staff expanded to handle the duties of CENTAF and the Joint Force Air Component Commander (JFACC), but, it was manned entirely with Air Force Officers.³⁶ This fact caused concern by the other services about how targets were selected and engaged.

At 2:13 AM, 17 January, 1991, local time in the Persian Gulf, the U.S.S. Wisconsin fired the first of eight TLAMs. The missiles flew toward the Iranian coast to orient their navigational equipment, then, turned toward Baghdad. Their target was the electrical grid that provided all power for the city. The desired effect was to silence command and control equipment, and, to possibly provoke a rebellion by dissatisfied citizens.³⁷

At 2:38 AM, an AH-64 of the 101st Airborne launched the first direct-fire shot of DESERT STORM. As part of Task Force Normandy, Apaches, led by Air Force Pave Low helicopters, attacked and silenced an Iraqi air defense radar site. The destruction of this target opened the western air approach into Iraq.³⁸

Later in the afternoon of 17 January, an MLRS/ATACMS crew received a fire mission to engage an Iraqi surface-to-air-missile site over one hundred kilometers away. Once the mission was transmitted to the battery at 6:00 PM, the Army Central Command (ARCENT) deep battle cell and the JFACC staff began to coordinate air-space for the missile. Six hours later, a corridor was cleared and the missile was fired with devastating results to the SAM site.³⁹

All three of these examples demonstrate the increasing scope of operational fires. The JFACC had the responsibility for coordinating the airspace in the theater for all service components. The JFACC formed a Joint Targeting Coordination Board (JTCB) to periodically update the targeting priorities and ensure visibility on targeting concerns across the services. Still, a concern among the ground commanders was that their interdiction nominations were not receiving adequate attention in the air campaign.⁴⁰

The operational fires were phenomenally successful during Operation DESERT STORM. Had the JFACC formed a joint targeting cell to plan and coordinate the operational fires, he may have alleviated some of the ground commanders' targeting concerns. A joint cell with representation from all of the participating services could have synchronized the targeting effort more closely with the ground maneuver plan. The targeting cell could have refined the nominations developed by the subordinate units of the different services, eliminating redundant nominations and updating

locations. After targets were attacked according to established priorities, subordinate commanders could have received feedback from the joint cell regarding the effects achieved on the targets nominated.

IV. Analysis/Organization and Duties of a Joint Operational Fires Cell

Joint Publication 3-09 (Draft) reinforces the current practice of the JFACC maintaining tasking authority over tactical and strategic aircraft for air interdiction, counterair, and theater reconnaissance. The JFACC may also add ATACMS, TLAM or attack helicopters to the air tasking order if made available by the joint force commander.⁴¹ To maximize the capabilities of the joint services operational firepower, the JFC should form a planning and execution cell to centralize these responsibilities above the service component level.

The Army has developed doctrine to support its relatively new role in the operational firepower arena. This emerging Army doctrine calls for the formation of a Deep Operations Coordination Cell (DOCC) at echelons above corps, and corps and division level. The DOCC is organized with appropriate joint service, multinational arms, and coalition force representatives.⁴²

The Army created the DOCC because of the increased range and lethality of weapon systems, and, because of the increased situational awareness provided by new intelligence platforms and sensors. As the lessons of OPERATION COBRA show, commanders recognized that to fight enemy echelons simultaneously they needed a separate staff element to plan and coordinate the deep fight with joint expertise.

The primary mission of the DOCC is to provide centralized coordination and management of Army Force (ARFOR) deep operations. For operational firepower coordination, the DOCC interacts with multiple Army, Air Force, Naval and Marine, and coalition aviation organizations, intelligence and analysis and control elements. These organizations provide the DOCC with its main source of targeting data.

The DOCC focuses the majority of its efforts on planning. The planning effort involves maintaining an accurate picture of the battlefield throughout the theater for friendly and enemy. Broad situational awareness includes accurate status on the assets available for operational fires and predictions on future conditions such as weather. The DOCC develops and conducts war games of courses of action for operational fires and coordinates for targeting information an operational firepower assets.⁴³

The JFC should determine how to integrate the components' firepower capabilities to influence future outcomes on the battlefield. Joint Publication 3-09 proposes using geographic areas of primary responsibility for command and control. The authors of 3-09 recognize that service components have overlapping responsibilities with assets that can perform more than one mission. Aircraft may perform close-air support against tactical targets and interdiction attacks against operational targets. In a similar manner, the TLAM and ATACMS may interdict and also

strike strategic targets. By dividing the responsibility by geographic regions, the authors of 3-09 have provided a blueprint of responsibilities:⁴⁴

<u>GAPR SURFACE CONTROL</u>		<u>AIRSPACE CONTROL</u>	<u>TARGETING</u>
Authority		Control	Control Authority
AO (Land)	JFLCC	JFACC	JFLCC
AO (Air)	JFACC	JFACC	JFACC
AO (Maritime)	JFMCC	JFMCC	JFMCC
AOA (Amphib)	CATF	CATF	CATF
JSOA	JFSOCC	JFSOCC	JFSOCC
JRA	JRAC	JFACC	JRAC

Abbreviations

AO -- Area of Operations
 AOA -- Amphibious Operations Area
 CATF -- Amphibious Task Force Commander
 JFLCC -- Joint Force Land Component Commander
 JFMCC -- Joint Force Maritime Component Commander
 JFSOCC -- Joint Force Special Operations Component Commander
 JSOA -- Joint Special Operations Area
 JRA -- Joint Rear Area
 JRAC -- Joint Rear Area Commander

The intent behind organizing the theater into joint operations areas is to ensure integration of effort by components. In studying several examples using the matrix, it will be evident that Joint Operations Areas (JOA) will aid in avoiding targeting duplication and potential fratricide.

The Joint Force Land Component Commander (JFLCC) is considered the supported commander up to the Joint Force forward boundary. The JFLCC is responsible for targeting within the geographic area of primary responsibility. The JFACC is considered the supporting commander within the land area of operations and has control over the assets used for

attacking targets. The JFLCC controls the airspace usually below five hundred feet, while the JFACC controls all airspace five hundred feet and higher. Since the JFLCC is responsible for surface fires, an assumption is that coordination is required between JFLCC and JFACC for missile fires above the altitude of five hundred feet.

The control and targeting of maritime area of operations is entirely the responsibility of the Joint Force Maritime Component Commander (JFMCC). The JFMCC controls surface and air assets within the maritime area of operations and performs the targeting. The maritime area of operations begins to resemble an independent campaign.

The problem with using geographic areas of primary responsibility is one of unity of command. Operational fires are less concerned with the current fight, as they are intended to set the conditions for future operations. By defining separate areas of responsibility the Joint Force Commander has established subordinate operational areas that could become independent campaigns, concerned with the current battle and not focusing a unified effort toward operational-level targets. The Joint Force Commander should maintain a centralized joint planning cell that concerns itself with coordinating various component assets to attack the operational targets that will influence the future campaign.

The United States Air Force has recognized the difficulties of integrating the longer range weapons

provided by the Army and has proposed several solutions to provide unity of command.

The Air Force approach is to have the JFACC assume responsibility for planning and executing all air and missile reconnaissance and interdiction missions beyond JFLCC boundaries.⁴⁵

Specifically, (unless there is JFC guidance to the contrary) the JFACC would be responsible for controlling all army aviation and ATACMS fires beyond the JFLCC forward boundary. The JFACC would control all naval and marine air reconnaissance and interdiction in excess of maritime air operations requirements. TLAM interdiction (operational-level targets) missions beyond JFLCC boundaries would come under control of the JFACC as would all missions, surface or air, beyond the range of observed fires.⁴⁶

The advantage of this recommendation is that the JFACC could provide operational focus in the targeting effort and have a single staff cell coordinating the assets of the various services. If the JFC recognizes that the Air Force does not have enough assets in theater to accomplish the objectives, uniting all air and missile assets under the JFACC would deny the enemy opportunities that dividing control of the force might present.

Several shortcomings arise from the Air Force proposal. The first is related to dividing responsibility for the battlefield along a JFLCC boundary or fire support coordination line (FSCL). At the tactical level, dividing

the battlefield is a doctrinal procedure. Adjacent units at all tactical levels, however, maintain close liaison to reduce the chance of presenting an opportunity for the enemy to exploit the seam between units. The result is more of a seamless web of continuity. At the operational level the JFLCC and JFACC must maintain the same type of close liaison and information flow across boundaries. This is particularly critical for operational fires because delays in executing deep operations could have significant influence on future battles.

At echelons above corps the army provides a battlefield coordination element (BCE) as the interface between the JFLCC and the JFACC.⁴⁷ The BCE provides representation at the Air Operations Center (AOC) by mirroring most of the air force functional areas. The BCE exchanges intelligence and operational information with the air operations center along with support requirements and coordination issues. The BCE resembles a fire support element at the operational level.

During DESERT STORM, the BCE found itself out of the decision cycle with the JFLCC. General Schwarzkopf personally made changes to the target list by issuing guidance directly to the JFACC, delaying the already prepared air tasking order (ATO) prepared at the Joint Targeting Coordination Board (JTCB). The result was a delay in attacking targets.⁴⁸ In this example, the BCE concept was not completely adequate in coordinating operational fires.

Another shortcoming with the air force proposal is in the target nomination and coordination process. In the DESERT STORM example the JFLCC needed near instantaneous input to the targeting process. The JTCB process and ATO cycle do not seem to provide the decisiveness required for combat. Expected enemy activity is subject to change during the targeting process. The doctrinal BCE, used during DESERT STORM, had difficulty providing updated information on enemy activity to the JFLCC. Consequently, the JFLCC dealt directly with the JFACC for changes to targeting and the ATO. The doctrinal process of a targeting board is valid, but, needs a more direct link to the JFC and JFLCC.

A final shortcoming with the air force proposal is the difficulty in preparing an air staff to function for the JFACC and controlling all missiles and aircraft within the theater. During OPERATION COBRA, the air force planners were not aware that Bradley's request for the bombers to approach perpendicular to the front was critical to avoiding fratricide. Army planners did not consider that the perpendicular approach would stack aircraft in holding patterns, subject to ground fire while waiting to enter the narrow corridor. Understanding joint service requirements was a shortcoming in both land and air staffs.

In DESERT STORM the JFACC staff was largely composed of air force officers thus limiting the breadth of knowledge of other services' capabilities. In a future crisis a rapidly

formed JFACC staff may not be trained to operate and coordinate immediately with other services.

A recommendation to current doctrine to ease coordination while maintaining an operational focus is to form a Joint Operational Fires Cell (JOFC) that plans and coordinates operational firepower. The cell will operate as part of the JFC's staff, working with the subordinate components to detect and attack operational targets.

The purpose of the JOFC will be to centralize the responsibility for planning and allocating operational firepower at the JFC level. Centralizing control above the component level will remove the responsibility for operational fires from the JFACC as a traditional mission.

In campaign planning, the JFC will establish the priorities for the use of operational firepower. All services and coalition forces must understand that they will have specified responsibilities to provide assets for intelligence collection, target attack, and battle damage assessment for operational-level targets. While establishing priorities, the JFC and the JOFC will issue planning guidance to the components for reserving assets for operational fires. The JFLCC, for example, may be required to maintain a percentage of ATACMS missiles for targets designated by the JFC. This guidance may include positioning requirements to achieve the necessary range to the target. The Navy may receive guidance on reserving a percentage of sorties for operational-level targets.

The JOFC works closely with the component intelligence analysts and the J-2 to assemble the most current intelligence picture of the enemy. The JOFC will have access to all of the intelligence collectors available to the JFC and can provide accurate targeting and refinement of locations.

In addition to maintaining a current picture of enemy dispositions, the JOFC maintains the current availability and status of all weapon and information systems used in attacking operational-level targets. This enables the JOFC to forecast the availability of systems and preposition them, if necessary, for an attack.

Subordinate unit commanders will nominate targets through their components to the JOFC. This will be a change from the current system of forwarding target nominations to the JFACC. The JOFC conducts a targeting board to review priorities, consider nominations, and develop a target list. The JOFC, under the authority of the JFC, assigns targets to components and coordinates for the positioning of observation platforms for final target verification and battle damage assessment, where necessary. After the targets are attacked, the components that nominated them are advised of the results. The JOFC also notifies the components if a nominated target was not attacked, such as a target that is not currently a JFC priority.

Several criteria are required to ensure that the JOFC is effective and credible in overseeing the joint effort.

The first is that the cell functions in the role of a fire support coordinator at a JFC level. The JOFC plans and allocates operational firepower for the JFC's operational priorities. The cell then coordinates and integrates between the components. The JOFC maintains a database of all assets available to the JFC for operational fires, and the status of each. The operational fires cell maintains overall authority for the use of the assets based on the JFC's allocation, and assigns operational targets to the components, coordinating the means of attack, when necessary.

A second criteria is that the JOFC is a standing organization. Like the BCE, a standing organization could be trained according to its SOP, develop contingency planning, and conduct routine liaison. The ongoing preparation would reduce the potential confusion encountered when forming an ad hoc organization that is required for immediate operations.

A third criteria is that the JOFC must effectively bridge the information gap created by component boundaries or geographic areas of primary responsibility. Operational fires are linked to future component operations. The JOFC would provide analysis to components on the impact that operational fires could have to their upcoming operations.

A final criteria is that all components should be represented in the JOFC to give credibility and the breadth of knowledge required of component capabilities. A truly

joint cell would not only ensure a perception among subordinated commanders of equitable allocation of operational firepower, but would centralize expertise about weapon and unit capabilities. A technically competent staff could ease coordination between components and provide additional precision to operations by understanding the enhancements and limitations of weapons.

V. Conclusion

The U.S. military has determined, as evidenced by emerging doctrine such as Joint Publication 3-09, that to satisfy the requirements of the expanding battlefield, Joint Force Commanders should centralize the planning and control of operational fires. Commanders have anticipated this requirement and have followed the traditional route of tasking the JFACC with the responsibility. In order to speed the targeting and coordination effort the Army has formalized the liaison with the Air Force through the Battlefield Coordination Element.

The analysis of the changing nature of the battlefield clearly shows the need for a doctrine, detailing a structure for command and control of operational fires. The power projection force, which employs operational fires, is inherently joint in organization. New developments in technology have enabled all services to participate in engaging operational targets and providing complementary effects in joint missions. To achieve decisive results the enemy must be attacked in depth simultaneously, striking the centers of gravity to paralyze the command and control of fielded troops, destroy logistics and contribute to moral collapse. The key to success in this type of operational environment is centralized planning employing assets from all the service components.

Doctrine for planning joint operations still suffers from attempting to partition the theater by assigning tasks

or battle space to components. Considering the relationship between the close battle, operational fires, and future battle plans, sectoring the battlefield between the components could leave gaps in responsibilities. The danger of creating a delay in passing mission planning or effects between the components becomes compounded when fighting the high-tempo information war that joint doctrine portrays.

The example from DESERT STORM in which the JLFCC bridged the gap by direct intervention in the targeting progress demonstrates the inadequacy of current doctrinal procedures. This example is somewhat complicated by the fact that Schwarzkopf was the CINC and the JFLCC, the lesson, however, is that the doctrinal liaison was handicapped by a delay in receiving information that was readily accessible to Schwarzkopf. The doctrinal targeting process was not synchronized with the intentions of the commander.

The Army recognized the need for centralized planning for operational fires and developed the structure for the DOCC. As a standing base organization, with the option for augmentation, the DOCC staff can conduct contingency planning, coordination and rehearsals prior to a crisis developing. The permanent nature of the DOCC enhances the ability of the staff to document the cell procedures in the form of an SOP and prepare for high-tempo, continuous operations.

As described in the previous chapter, joint doctrine should establish a structure for an operational fires cell to provide the immediate status of joint assets and capabilities, and conduct planning and coordination across the components. The structure for the cell should be permanent in nature for similar reasons as the DOCC. A permanent organization could maintain contact with designated joint forces during peacetime, monitoring requirements and updating plans.

Such a cell could be augmented for the purposes of exercises or crisis action. The advantage of maintaining a permanent base structure in peacetime is that augmentation in crisis would not resemble an ad hoc organization, as would assembling a cell with no permanent base organization. If possible, augmenting staff members could be identified during peacetime and be kept informed by the joint operational fires cell staff for purposes of continuity.

The changing nature of combat operations provides a challenge for the Joint Force Commander and staff. Advocating a Joint Operational Fires Cell would be a step in formalizing joint doctrine for the conduct of operational fires. The changing nature of technology may provide the catalyst for the joint forces to update doctrinal procedures for applying operational firepower. The command, control, and complementary effects of operational firepower assets will continue to increase in significance in future conflicts.

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U.S. Doctrine for Command and Control of
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